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FROGS OF THE GENUS *PLATYMANTIS* (RANIDAE) FROM NEW BRITAIN WITH DESCRIPTIONS OF NEW SPECIES

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Zweifel (1960) commenting on the amphibian fauna of New Britain as compared with that of New Guinea and the Solomon Islands, conjectured that the Bismarck Archipelago had a more recent origin in geologic time and consequently has a more impoverished amphibian fauna, the result of overwater dispersal from both New Guinea and the Solomons. He also noted (p. 1) that the frog fauna was probably poorly known.

Recent explorations, by one of us (Tyler), on New Britain have added the family Microhylidae (Tyler, 1964) and several new species of frogs to the island's fauna. Included are three new species and a new subspecies, described below, belonging to the ranid genus *Platymantis* Günther (*Platymantis* replaces the name *Cornufer* Tschudi for the genus, Zweifel, 1967). These increase the number of species of *Platymantis* known from New Britain to six, double the number known to Zweifel (1960) and Gorham (1965) but still less than the nine presently recognized from Bougainville Island in the Solomons (Brown, 1965). With the exception of *P. papuensis* Meyer, as treated in the present study, the species of New Britain are distinct from those of the Solomons, though their closest affinities, with the exception of *P. Boulengeri* (Boettger) and *P. rhizophalcus*, new species, appear to be with Solomons' species. This suggests a relatively long isolation of this segment of the fauna from related species in the Solomons and New Guinea, but less long from the Solomons.

Measurements determined, to the nearest 0.1 mm, are based on preserved specimens. Snout-vent length was measured from tip of snout to vent, with the animal held flat, ventral side down; head length from tip of snout to posterior edge of tympanum; head breadth at angle of jaws; tibia length as length of lower leg bone; eye diameter from anterior to posterior edge of socket; third finger length from tip to base of second subarticular tubercle; first finger length from tip to base of subarticular tubercle. When ratios are stated in the descriptions, the data are presented in the following manner: head breadth/snout-vent length = average (number of specimens: range). The most useful diagnostic characters are the basis of the key that follows.

Key to Species of *Platymantis* from New Britain

1. Finger disks, except for 1st finger, considerably broader than penultimate phalanx, about as broad or broader than toe disks; 4th finger, when adpressed, longer than either 1st or 2nd 2
- 1'. Finger disks not or scarcely broader than penultimate phalanx, usually narrower than toe disks; 4th finger, when fingers are adpressed, shorter than 1st or 2nd finger, or all three about equal in length 3
2. Sides of head rather uniformly blackish; dorsum marked by several very long, narrow folds; breadth of 3rd finger disk usually more than 25 per cent of 3rd finger length; breadth of 3rd finger disk greater than breadth of 3rd toe disk; head breadth usually greater than 75 per cent of tibia length *rhizophalcus*
- 2'. Sides of head not uniformly blackish; dorsum relatively smooth or marked by short folds; breadth of 3rd finger disk usually less than 25 per cent of 3rd finger length; breadth of 3rd finger disk usually slightly less than breadth of 3rd toe disk; head breadth usually less than 75 per cent of tibia length *papuensis*
3. Snout-vent length of mature females greater than 55 mm; head breadth about equal to tibia length (except for juveniles); 3rd finger length rarely as great as 30 per cent of head breadth; diameter of eye 70 to 90 per cent of snout length, rarely more than 85 per cent *boulengeri*
- 3'. Snout-vent length of mature females rarely more than 50 mm; head breadth usually less than 85 per cent of tibia length; 3rd finger length 30 to 40 per cent of head breadth; diameter of eye about equal to snout length, rarely less than 90 per cent 4
4. Snout-vent length of mature males 18 to 25 mm; 1st finger about as long as adpressed 2nd; 1st finger length 60 to 70 per cent of 3rd finger length *akarithymus*

- 4'. Snout-vent length of mature males more than 25 mm; 1st finger usually longer than adpressed 2nd; 1st finger length 75 to 90 per cent of 3rd finger length 5
5. Dorsum with numerous folds of short to moderate length; urn-shaped, axillary pair of folds not present (Fig. 2a); eye diameter usually greater than 35 per cent of head breadth; first finger length usually less than 85 per cent of third finger length; posterior surface of lower leg lacking conspicuous, blackish, longitudinal band *mimicus*
- 5'. Dorsum relatively smooth except for urnshaped, axillary pair of folds; eye diameter usually less than 35 per cent of head breadth; first finger length usually more than 85 per cent of third finger length; posterior surface of lower leg with relatively conspicuous, irregularly margined, blackish, longitudinal band *gilliardi*

Platymantis boulengeri (Boettger)

Cornufer boulengeri Boettger, 1892, Katalog der Batrachier-sammlung im Museum der Senckenbergischen Naturforschenden Gesellschaft in Frankfurt am Main, p. 18: New Britain Island.

Definition: A large species for the genus, 6 mature females range from about 66 to 79.7 mm snout-vent length; head much broader than long; head breadth/tibia length = 1.00 (6: 0.845–1.11), at least for females; snout round-pointed; canthus rostralis rather sharply rounded; loreals strongly oblique, slightly concave; eye relatively small, its diameter/snout length = 0.776 (6: 0.702–0.880) and diameter/head breadth = 0.257 (6: 0.227–0.320); finger tips rounded, without dilated disks; fingers relatively short (Fig. 1a), third finger length/head breadth = 0.284 (6: 0.255–0.303) and third finger length/snout length = 0.848 (6: 0.772–0.916); first and second fingers about equal in length; first finger length/third finger length = 0.691 (6: 0.647–0.734); subarticular tubercles, large, prominent, rounded; inner metacarpal tubercle broadly oval; outer narrow, elongate; tibia relatively short, its length/snout-vent length = 0.453 (6: 0.435–0.489); toes webbed at base; toe disks somewhat broader than penultimate phalanx; subarticular tubercles smaller than those of fingers, prominent, somewhat pointed; inner metacarpal tubercle about twice as broad as long; outer small, round; solar tubercles small and scattered; dorsum marked by several very narrow, usually broken ridges, more or less parallel posterior to the axillary region but anteriorly diverging in a graceful fanlike pattern.

Color (in preservative): Dorsal ground color grayish tan to brown; sides of head to posterior end of supratympanic fold, dark brown to blackish; limbs marked by dark and light bands; venter heavily mottled or flecked with grayish brown; in life, thoracic and throat regions and posterior surface of thigh and lower leg reddish; light spots in thoracic and throat regions pale yellow or grayish.

Remarks: This large species is not obviously, closely related to other

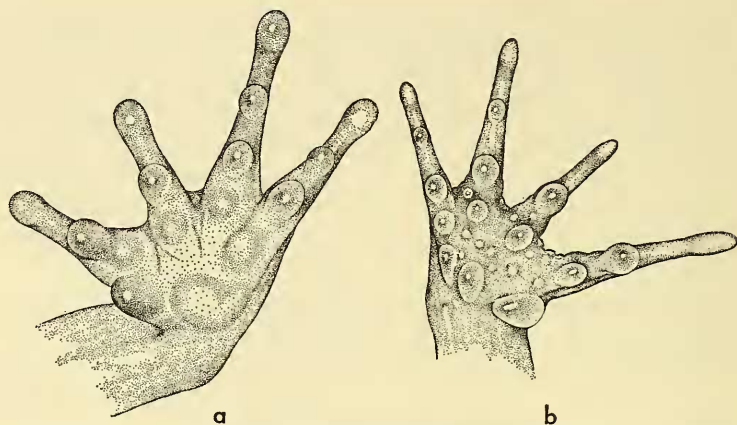


FIG. 1. (a) *Platymantis Boulengeri*, inferior view of hand; (b) *Platymantis Gilliardi*, inferior view of hand.

known species. No size data are available for males, but the smallest recorded mature female is 66 mm snout-vent length. Zweifel (personal correspondence) states that the 54 mm specimen which he shows on the graph (1960, p. 9) is an immature female.

Platymantis Gilliardi Zweifel

Platymantis Gilliardi Zweifel, 1960, Amer. Mus. Novitates, no. 2023, p. 10: New Britain Island.

The 10 examples of this species, South Australian Museum nos. 6866, 6946, 7023, 7062-63, 7068, 7026 and Stanford University nos. 22877-78 collected at low altitudes in New Britain, makes possible a more adequate definition in terms of variability.

Definition: A moderate-sized species for the genus, 7 mature females range from 40.9 to 48.7 mm snout-vent length (a female measuring 39.9 mm is apparently not quite mature judging by the fact that the oviducts are straight and undilated), 2 mature males measure 33.2 to 34.2 mm; head breadth/snout-vent length = 0.419 (10: 0.411-0.442); head-breadth/tibia length = 0.815 (10: 0.765-0.866) snout rounded to round-pointed; canthus rostralis rounded; loreals somewhat oblique, slightly concave; eye moderate, its diameter/snout-length = 1.01 (10: 0.944-1.11), diameter/head breadth = 0.321 (10: 0.282-0.345); third finger moderately long, its length/head-breadth = 0.303 (10: 0.283-0.319); its length/snout-length = 0.944 (10: 0.855-1.02); finger tips pointed or round-pointed, not or scarcely dilated (Fig. 1b); very shallow circummarginal groove usually present, first finger, longer than second, nearly as long as third when fingers are adpressed; first finger length/third finger length = 0.873 (10: 0.833-0.919); subarticular tubercles,

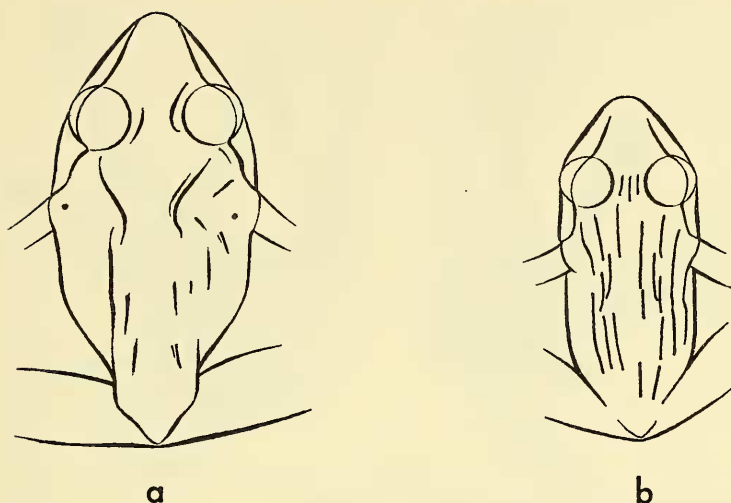


FIG. 2. (a) *Platymantis gilliardi*, dorsal-fold pattern; (b) *Platymantis mimicus*, dorsal-fold pattern.

large, prominent, rather pointed; inner metacarpal tubercle large, nearly as broad as long; outer broadly oval; palmar tubercles relatively large and prominent; tibia relatively long, its length/snout-vent length = 0.522 (10: 0.479–0.584); toe disks slightly broader than penultimate phalanx, upper part separated from inferior pad by a marginal groove; subarticular tubercles moderately large, strongly protruding, pointed; inner metatarsal tubercle about twice as broad as long; outer strongly protruding, round; solar tubercles prominent and numerous; dorsum relatively smooth except for small granules and a pair of urn-shaped folds between post-orbital and axillary regions (Fig. 2a).

Color (in preservative): Dorsal ground color variable, from light gray to dark reddish-brown, relatively uniform or with a few black spots in axillary and groin regions; sometimes with darker areas around prominent dorsal folds or tubercles; limbs usually with moderately contrasting, dark and light, transverse bands.

Remarks: The present series indicates that *P. gilliardi* is indeed a close relative of *P. acrochordus* (Brown). As pointed out by Brown (1965, p. 12), *P. acrochordus* differs in its denser dorsal rugosity, slightly smaller size at maturity, slightly broader head relative to snout-vent length (for *acrochordus* this ratio is 0.444 [11: 0.427–0.460]) or tibia length (for *acrochordus* this ratio is 0.935 [13: 0.889–1.00]); somewhat shorter tibia relative to snout-vent length (for *acrochordus* this ratio is 0.475 [13: 0.441–0.501]); and shorter snout relative to third finger length (for *acrochordus* this ratio is 0.800 [13: 0.705–0.913]).

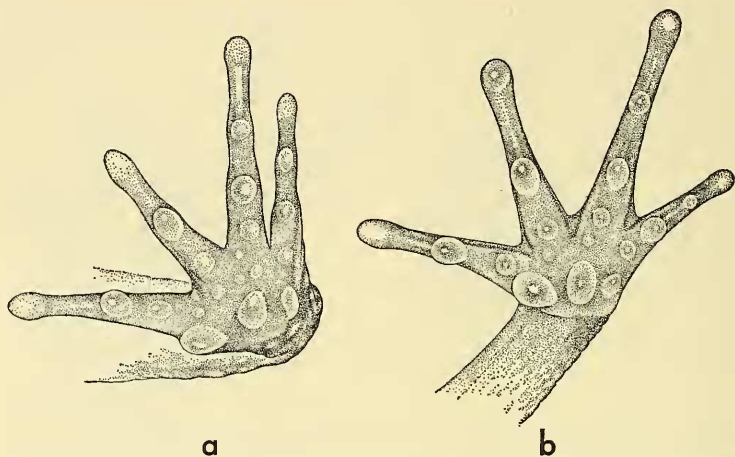


FIG. 3. (a) *Platymantis mimicus*, inferior view of hand; (b) *Platymantis akarithymus*, inferior view of hand.

***Platymantis mimicus* new species**

Holotype: South Australian Museum no. 6868, a mature male, collected at Numundo Plantation, Willaumez Peninsula on the north coast of New Britain Island, 19 January 1966, by M. J. Tyler.

Paratypes: Stanford University no. 22874, from same locality as holotype; South Australian Museum nos. 7064 and 7069, Pomugu about 7 miles northwest of Kandrain, south coast of New Britain and no. 6864 from Gazelle Peninsula, northeast coast of New Britain.

Description: A moderate-sized *Platymantis*, 4 mature males measure 27 to 40 mm snout-vent length, single mature female 45.1 mm snout-vent length; habitus relatively slender; head gradually tapering, snout rounded, upper jaw round-pointed; head-breadth/snout-vent length = 0.404 (5: 0.386–0.420) and head-breadth/tibia length = 0.776 (5: 0.717–0.839); eye large, its diameter/snout length = 1.07 (5: 1.04–1.11) and diameter/head breadth = 0.341 (5: 0.314–0.357), canthus rostralis rounded, loreal region oblique, moderately concave; fold dorsal and posterior to the tympanum; tympanum diameter/eye diameter = 0.542 (5: 0.500–0.578); fore limbs well developed; tips of fingers not or scarcely dilated, rounded, with faint evidence of marginal groove separating dorsal and ventral portions; first finger usually longer than second or fourth but shorter than third when fingers are adpressed (Fig. 3a); first finger length/third finger = 0.801 (5: 0.737–0.838); third finger relatively long, its length/snout length = 1.05 (5: 1.00–1.13) and length/head breadth = 0.335 (5: 0.308–0.372); subarticular tubercles strongly developed, rounded to pointed, supernumary palmer tubercles moderately developed; metacarpal tubercles large, prominent, inner and middle one broad, the outer more narrow; hind limbs relatively long;

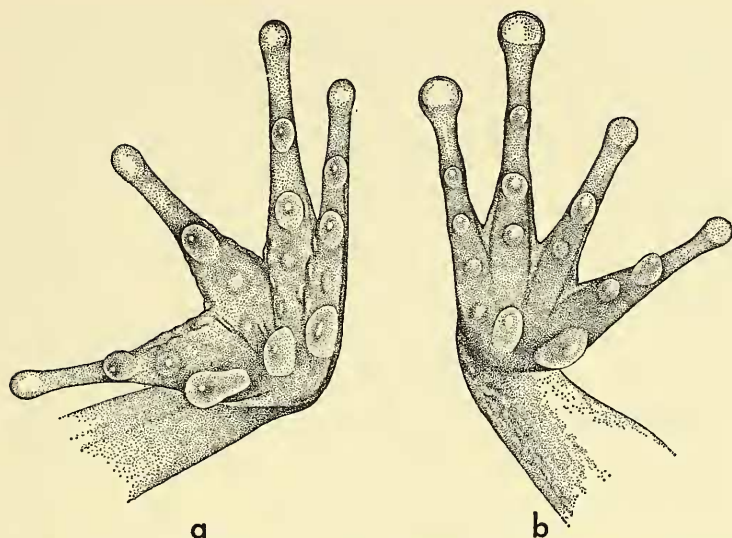


FIG. 4. (a) *Platymantis papuensis schmidtii*, inferior view of hand; (b) *Platymantis rhipiphalcus*, inferior view of hand.

tibia length/snout-vent length = 0.523 (5: 0.404–0.541); toes with minute web at base; tips slightly dilated, rounded, ventral portion of disk, separated from the dorsal portion by circummarginal groove; sub-articular tubercles well developed, rather pointed; inner metatarsal tubercle large, rather broad, outer small, conical; solar tubercles scattered, prominent; skin of dorsum with numerous short to moderately long, rather thick folds, (Fig. 2b) least conspicuous for the 44 mm male, dorsum, between folds, and lateral surfaces with low, round granules, venter with flat granules on thorax and abdomen.

Measurements of holotype (in mm): Snout-vent length 29.0; head length to posterior edge of tympanum 11.1; head breadth 11.2; eye diameter 4.0; tympanum diameter 2.4; snout length 3.6; third finger length 3.8; first finger length 3.1; tibia length 14.9; hind limb length 48.5.

Color: Dorsal ground color grayish to dark reddish brown, relatively uniform or with some lighter or darker blotches; light interorbital area extending forward on snout; lips dark barred; lower lateral surfaces marked by light, rounded spots on grayish background; venter rather uniformly light on thorax and abdomen, on throat and head with dark flecks; hind limbs marked by dark, transverse bands; under surface of feet dark.

Etymology: The species name, *mimicus*, is from the Latin meaning imitative.

Remarks: This third, previously undescribed species of the *acrochordus-gilliardi* group was first noted, during field work, to differ from *gilliardi* in its distinct call and calling site. *P. gilliardi* calls from open spaces on the ground, stems of low bushes such as ornamental crotons or trunks of banana trees; the new species calls from concealed places beneath piles of leaves and coconut husks. Though very similar in the nature of the finger and toe disks and in general appearance, *P. mimicus* may be distinguished from both *gilliardi* and *acrochordus* on the basis of the slightly narrower head relative to the tibia length or snout-vent length, the greater length of the third finger relative to the snout-length or the head breadth (see ratios under definition and remarks for *gilliardi*), and the absence of a conspicuous urnshaped pair of folds in the axillary regions. From *gilliardi*, it differs further in the shorter first finger relative to the third finger length, the more numerous dorsal folds (Fig. 4), and the lack of a conspicuous, blackish, longitudinal band on the posterior surface of the lower leg and from *acrochordus* in the narrower head relative to tibia length (for *acrochordus* this ratio is 0.935 [13: 0.889–1.00]).

***Platymantis akarithymus* new species**

Holotype: South Australian Museum no. 7073, a mature male, collected in the Pomugu area about seven miles northwest of Kandrian on the south coast of New Britain Island by M. J. Tyler, 31 January 1966.

Paratypes: South Australian Museum no. 6982 and Stanford University no. 22875 from same locality as holotype; South Australian Museum no. 7066 and 7082 from near Malassait 40+ miles west of Rabaul in the Baining Ranges of Gazelle Peninsula on northeast coast of New Britain Island.

Description: A small *Platymantis*, at least for males, 5 mature males measure 18.5 to 24.2 mm snout-vent length; habitus moderately slender; head about as broad as long, breadth/head length = 0.994 (5: 0.960–1.04); head breadth/tibia length = 0.780 (5: 0.707–0.852); snout pointed; upper jaw only slightly protruding; eye large, its diameter/snout-length = 1.03 (5: 1.00–1.13) and diameter/head breadth = 0.391 (5: 0.360–0.421); tympanum distinct, its diameter/eye diameter = 0.535 (5: 0.500–0.556), and diameter/head breadth = 0.210 (5: 0.199–0.232); canthus rostralis rounded, loreal region slightly oblique, moderately concave; fold dorsal and posterior to the tympanum; fore limbs well developed; fingers rounded at tip, not or but slightly dilated; ventral portion at tip delimited laterally and terminally by shallow groove, except for inner finger; fingers without webs; subarticular tubercles strongly developed, rather sharp pointed; transverse row of moderately developed palmer tubercles; inner and middle metacarpal tubercles large, slightly longer than broad, outer small, round to oval; first, second and fourth finger about equal in length when fingers are adpressed (Fig. 3b); first finger length/third finger length = 0.649 (5: 0.610–0.700); third finger length/snout length = 0.993 (5: 0.947–1.03); hind limbs relatively long;

tibia length/snout-vent length = 0.499 (5: 0.484–0.519); toes without webs, tips not or but very slightly dilated, rounded, ventral portion of tip separated from dorsal portion by groove laterally and terminally; subarticular tubercles well developed, somewhat pointed; inner metatarsal tubercle broadly oval, outer round and rather pointed; solar tubercles evident but not well developed; skin of dorsum, upper lateral surfaces, and to some degree limb surfaces marked by numerous prominent, round, oval or somewhat elongate tubercles; venter, posterior to axilla, and ventral and posterior thighs with small, rounded granules.

Measurements of holotype (in mm): Snout-vent length 24.0 head length, measured to posterior edge of tympanum 9.8; head breadth 9.5; eye diameter 4.0; tympanum diameter 2.2; snout length 4.0; third finger length 4.1; tibia length 12.1; length of hind limb 40.7.

Color (in preservative): Dorsum generally darker on middorsal area than on dorso-lateral or lateral surfaces; but with overall pattern of irregular, light and dark blotches; most of short dorsal folds and tubercles and immediately surrounding areas blackish; light patch present in anterior orbital area; limbs and jaws barred with prominent light and dark bands; bright red patch in life (fading in preservative) in groin and on back of thigh for this small, all-male sample; venter is heavily mottled with dark flecks, especially anterior to fore limbs.

Etymology: The species name *akarithymus* is from the Greek *akares* meaning short and *thymos* meaning warty growth.

Remarks: *Platymantis akarithymus* apparently has its closest affinities with that group of small to moderate species which have finger tips not or but very slightly dilated. These include *P. parkeri* (Brown) and *P. aculeodactylus* Brown from the Solomons, *P. pelewensis* Peters from the Palau Islands, and *P. dorsalis* A. Duméril from the Philippines. It is most similar to *P. parkeri* in the following combination of characters: shape, small size and abundance of the dorsal tubercles; prominence and shape of the tubercles on the undersurface of the hands and feet; the undilated finger tips; and size at maturity (as measured by snout-vent length). It differs from the latter in the greater snout-vent length at maturity, the greater length of the tibia relative to the snout-vent length (for *parkeri*, tibia length/snout-vent length = 0.458 [20: 0.428–0.484]) and the larger tympanum relative to the eye diameter (for *parkeri*, tympanum diameter/eye diameter = 0.640 [15: 0.560–0.700]) or the head breadth (for *parkeri*, tympanum diameter/head breadth = 0.235 [15: 0.210–0.255]). Also, the first and second fingers are about equal in length in the sample of *P. akarithymus* available to us, whereas the first finger is usually distinctly shorter than the second in *P. parkeri*.

***Platymantis rhipiphaleus* new species**

Holotype: South Australian Museum no. 7071, a male, collected in the Pomugu area about 7 miles northwest of Kandrian on the south coast of New Britain Island by M. J. Tyler, 30 January 1966.

Paratypes: South Australian Museum no. 7078 and Stanford University no. 22873, collected at San Remo plantation on Willaumez Peninsula about 150 miles west of Rabaul on the north coast on New Britain by M. J. Tyler, 20 January 1966.

Description: A moderately large *Platymantis*, at least for females, (no. 7078, measuring 41.4 mm snout-vent length, is immature, with small ovaries and straight, undilated oviducts); the unique, mature male measures 28.4 mm; habitus relatively slender; head depressed; snout pointed; upper jaw protruding; head about as broad as or slightly broader than long; head breadth/snout-vent length = 0.413 (3: 0.401–0.421), head breadth/tibia length = 0.799 (3: 0.776–0.844); eye moderate, its diameter/snout-length = 0.900 (3: 0.877–0.930); tympanum large, its diameter/eye diameter = 0.663 (3: 0.580–0.750); tympanum diameter/head breadth = 0.231 (3: 0.207–0.263); canthus rostralis rounded, loreal moderately oblique; a fold dorsal and posterior to tympanum; fore limbs well developed; tips of fingers depressed and moderately dilated into rounded disks, ventral portion separated from dorsal by circum-marginal groove; diameter of third finger disk/tympanum diameter = 0.439 (3: 0.400–0.483); diameter of third finger disk/third finger length = 0.261 (3: 0.250–0.267); subarticular tubercles large and strongly developed as are inner, middle and outer metacarpal tubercles; low fringe on outer edge of fourth finger and distal metacarpal region, first finger slightly shorter than second which is shorter than fourth when fingers are addressed (Fig. 4b); third finger length/snout length = 0.974 (3: 0.938–1.00); first finger length/third finger length = 0.613 (3: 0.578–0.633); hind limbs relatively long, tibia length/snout-vent length = 0.518 (3: 0.499–0.536); toes with minute web at base; tips of toes depressed, dilated into slightly pointed disks somewhat smaller than those of fingers, diameter of third finger disk/diameter of third toe disk = 1.13 (3: 1.07–1.20); ventral portion of disk delimited from dorsal by circummarginal groove, subarticular tubercles large, well developed; inner metatarsal tubercle elongate, outer round; solar tubercles small, low, not very numerous. Skin of dorsum with several narrow ridges, relatively uninterrupted from head or axillary regions to groin, diverging in gracefully curved, fanlike pattern anterior to axillary region; skin granular on posterior venter and posterior surface of thighs.

Measurements of holotype (in mm): Snout-vent length 28.4; head length measured to posterior edge of tympanum 11.8; head breadth 11.4; eye diameter 4.0; tympanum diameter 3.0; snout length 4.5; third finger length 4.5; diameter of third finger disk 1.2; diameter of third toe disk 1.0; tibia length 14.7; length of hind limb 47.5.

Color (in preservative): Dorsum variable, light grayish brown to dark reddish, with darker interorbital bar; relatively uniform posterior to head, or with few small darker spots or darker, broad, middorsal stripe; hind limbs with rather indistinct dark cross bands; anal region grayish or blackish; dark band of varying width from snout through ear; venter light with faint specks of pigment for holotype, paratypes with expanded

pigment cells, exhibiting brownish blotches, heaviest on chin, throat and fore limb region.

Etymology: The species name, *rhipiphalcus*, is from the Greek *rhipis* meaning fan and *phalkes* meaning rib; referring to the arrangement of the narrow dorsal folds.

Remarks: The relatively long, very narrow dorsal folds which exhibit a fanlike pattern anterior to the forelimbs also characterizes *P. Boulengeri* from New Britain and frequently *P. corrugatus* (Duméril) from the Philippine Islands. In size of finger disks relative to finger length, *P. rhipiphalcus* resembles *P. papuensis schmidtii*.

From the Philippine *P. corrugatus*, *P. rhipiphalcus* is readily distinguished by its more dilated finger tips and relatively shorter first finger. The dilated finger tips also readily separate this species from *P. Boulengeri*. Other characteristics which readily distinguish it from *P. Boulengeri* are its narrower head relative to head or tibia length, its larger eye relative to snout length or head breadth, and the longer tibia relative to snout-vent length. In these proportions, only the 27 mm juvenile of *Boulengeri* is similar to the specimens of *rhipiphalcus*. The juvenile *Boulengeri*, for example, is the only specimen of this species with a ratio of head breadth to snout-vent length below 0.430. The largest female of *P. rhipiphalcus* (41.1 mm snout-vent length) with small, straight oviducts, is clearly immature, though it might well have become mature long before attaining a length of 66 mm, the size of the smallest female of *Boulengeri* in our series. The male (holotype) is adult at 28.4 mm snout-vent length. Unfortunately, size at maturity for males of *Boulengeri* is not known.

P. macrops (Brown) and *P. meyersi* (Brown) both lack the distinctive, long narrow dorsal folds. *P. macrops* is also distinguished by its much smaller size and larger eye. *P. meyersi* is further distinguished by the smaller disks relative to finger length (for *meyersi* this ratio is 0.127 [16: 0.11–0.156]), and relative to tympanum diameter (for *meyersi* this ratio is 0.374 [18: 0.337–0.421]).

Platymantis papuensis Meyer

Platymantis corrugatus papuensis Meyer, 1874, Monatsber. Akad. Wiss. Berlin, p. 139: Biak Island, Dutch New Guinea.

A group of morphologically very similar species, which range from the Pelau and Philippine Islands in the north to New Guinea and the Solomon Islands in the south, have been assigned by numerous previous authors to *P. corrugatus* or *Rana rugata* (e.g.) Werner 1900, van Kampen 1923, and Hediger 1934. Loveridge (1948, p. 407) continued to follow this broad interpretation of *P. corrugatus*, designating the New Guinean population, as did Meyer, a subspecies under the name *P. corrugatus papuensis*. Brown (1952, p. 51) placed *corrugatus* from the Philippines and *papuensis* from New Guinea and the Solomons in different species. Inger (1954, p. 351 ff.) came to the same conclusion, and pointed out

that *corrugatus* and *papuensis* are actually less closely related than are *papuensis* and *meyeri* (= *dorsalis*), another Philippine species. The definition which follows is based upon samples from the populations of New Guinea, the Bismarks, and the Solomons.

Definition: A moderately large species of the genus, 48 mature females from these populations measure 39.8 to 63.6 mm snout-vent length, and 43 mature males measure 29.8 to 45.8 mm; habitus relatively slender; head breadth slightly less than to slightly greater than head length; head breadth/snout-vent length = 0.397 (48: 0.363–0.439), head breadth/tibia length = 0.745 (48: 0.632–0.809); eye moderate, its diameter/snout length = 0.543 (48: 0.446–0.653); tympanum distinct and moderately large; its diameter/eye diameter = 0.543 (48: 0.446–0.571); snout rounded to broadly round-pointed; loreals somewhat oblique and shallowly concave; finger tips bluntly rounded or with depressed slightly dilated disks; first finger varies from slightly shorter than to somewhat longer than second, which is shorter than fourth when fingers are adpressed; first finger length/third finger length = 0.732 (48: 0.578–0.833); snout length/third finger length = 1.068 (48: 0.896–1.32); subarticular tubercles moderate to large, strongly protruding, round; inner metacarpal tubercle about half as broad to nearly as broad as long; outer broadly oval to nearly round; supernumary tubercles at base of fingers prominent (Fig. 4a); hind limbs relatively long, tibia length/snout-vent length = 0.535 (48: 0.473–0.593); toes with minute web at base; tips of toes dilated into small, depressed disks; upper and lower portions delimited by circummarginal groove; toe disks more broadly dilated than, or about equal to, finger tips or disks, subarticular tubercles well developed, somewhat pointed; inner metatarsal tubercle about half as broad to nearly as broad as long; outer small to moderate, round; solar tubercles low and scattered to relatively prominent and rather numerous for the different races; skin of dorsum marked by sparse to moderately numerous, short or moderately elongate folds; venter relatively smooth.

Color (in preservative): Dorsal ground color variable, gray to grayish red or brown, relatively uniform or with scattered dark blotches, lighter middorsal area or dorsolateral stripes present in some instances; lateral surfaces somewhat lighter, lips with or without distinct transverse bars; hind limbs with relatively inconspicuous, dark, transverse bands; venter uniformly light or with scattered dark flecks anteriorly.

Remarks: Moderately large size at maturity and pattern of the dorsal folds, as well as the limited dilation of the digital tips, suggest possible affinities of *P. papuensis* with *P. myersi* and *P. solomonis* Boulenger among species sympatric with *P. papuensis*. As noted by Inger (1954, p. 355), among nonsympatric species, *P. papuensis* probably has affinities with *P. dorsalis* (= *meyeri* of Inger) from the Philippines and *P. pelewenis* Peters from the Palau Islands.

P. solomonis and *P. myersi* both occur in the Solomon Islands along with *P. papuensis weberi*. Both *myersi* and *solomonis* are somewhat

larger at maturity than *papuensis* (Table 1). *P. myersi* further differs from *P. papuensis* in the lack of solar tubercles on the feet, its smaller tympanum relative to the size of its eye (Table 1), and the slightly greater webbing of its toes. From the sympatric (Solomons) population of *papuensis weberi*, *myersi* also differs in the greater finger disk breadth relative to toe disk breadth.

The finger tips of *P. solomonis* are bluntly rounded, not depressed, with dorsal and ventral parts of the disk separated by a circummarginal groove as is typically characteristic of *P. papuensis weberi* and *P. papuensis schmidtii*. In this characteristic, the structure of the finger tips, *P. papuensis* from New Guinea appears more variable and many specimens closely resemble *P. solomonis*. The ratio of shorter tibia relative to snout-vent length (rarely as great as 50 per cent for *P. solomonis* and rarely less than 50 per cent for *P. papuensis*) (Tables 1 and 2) also serves to distinguish these two species. The New Guinea subspecies again exhibits the greatest overlap with *solomonis* for this characteristic.

The subspecies of *P. papuensis*

Our comparison of samples of reasonable size of the three geographically isolated, sibling populations from New Guinea, the Bismarks and the Solomons indicate close affinity in terms of similarities in a number of anatomical characteristics. These include: (1) rather narrow, relatively short or interrupted folds on the dorsum; (2) tibia length usually more than 50 per cent of the snout-vent length; (3) head breadth about 40 per cent of the snout-vent length and about equal to the head length; (4) length of third finger slightly less than to slightly greater than the snout length; (5) diameter of eye about twice the diameter of the tympanum, and 80 to 100 per cent of the snout length; (6) disks of toes small, rounded, slightly broader than the subtending phalanx; (7) finger tips bluntly rounded or slightly dilated and depressed into small disks; (8) solar tubercles present, moderately or conspicuously protruding; (9) color pattern frequently exhibits broad dorsolateral light stripes.

It is interesting to note that the Solomons and New Guinea populations exhibit greater similarity in many characteristics than do either with the intermediate New Britain population. However, our data shows that the three populations can be distinguished on the basis of a combination of several characteristics. We therefore propose that all three be given subspecific status in the species *papuensis*. The most useful distinguishing characteristics are given in the key to the subspecies.

The probable conspecific relationships of the populations of New Guinea and the Solomons has been recognized previously, and the population of the Solomon Islands designated as a subspecies under the name *Platymantis papuensis weberi* Schmidt (Brown, 1952, p. 50). This leaves the geographically intermediate sibling population in the Bismark archipelago nameless, in the sense that it has not been referred to either subspecies.

TABLE 1. Certain measurements (in mm) and proportions for samples of *Platymanthis myersi* and *solomonis*
(R = range, M = mean, N = number)

	<i>P. myersi</i>		<i>P. solomonis</i>		<i>P. papuensis</i>	
	♂♂	♀♀	♂♂	♀♀	♂♂	♀♀
Snout-vent length	R = 50.0-74.1 N = 10	80.0-90.0 3	43-9-50.5 6	61.7-85.7 6	29.8-45.8 43	39.8-63.6 38
Head breadth	R = 0.736-0.839		0.777-0.880		0.632-0.809	
Tibia length	M = 0.794 N = 20		0.818 17		0.745 48	
Tibia length	R = 0.481-0.560		0.476-0.506		0.473-0.593	
Snout-vent length	M = 0.516 N = 20		0.486 16		0.535 48	
3rd finger disk or tip breadth	R = 0.905-1.10		0.696-0.917		0.550-1.00	
3rd toe disk breadth	M = 0.993 N = 15		0.810 11		0.803 56	
Tympanum diameter	R = 0.337-0.421		0.425-0.577		0.446-0.571	
Eye diameter	M = 0.374 N = 18		0.498 17		0.543 48	

TABLE 2. Certain measurements and proportions for samples of *Platymantis myersi* and *solomonis* (R = range, M = mean, N = number)

	<i>P. p. papuensis</i>		<i>P. p. schmidtii</i>		<i>P. p. weberi</i>	
	♂♂	♀♀	♂♂	♀♀	♂♂	♀♀
Snout-vent length at maturity	R = 33.0-45.8 N = 17	43.7-57.9 19	29.8-39.9 13	39.8-60.1 13	36.0-45.0 13	54.0-63.6 16
3rd finger disk breadth	R = 0.132-0.192 M = 0.161 N = 20		0.170-0.250 0.203 20		0.112-0.176 0.134 17	
3rd finger length						
3rd finger disk or tip breadth	R = 0.714-0.910 M = 0.810 N = 19		0.813-1.00 0.901 20		0.550-0.833 0.677 17	
3rd toe disk breadth						
3rd finger disk breadth	R = 0.222-0.326 M = 0.299 N = 20		0.333-0.500 0.423 20		0.208-0.294 0.237 17	
Tympanum diameter						
1st finger disk breadth	R = 1.00-1.22 M = 1.09 N = 20		0.667-0.923 0.794 20		0.846-1.11 0.999 17	
3rd finger disk breadth						
1st finger length	R = 0.690-0.827 M = 0.757 N = 20		0.569-0.738 0.699 20		0.718-0.833 0.775 18	
3rd finger length						

Inger (1954: p. 355) inadvertently referred this population to *Cornufer* (= *Platymantis*) *nova-britannica* (a manuscript name of Schmidt) creating a *nomen nudum* as noted by Zweifel (1960, p. 22). Zweifel (op. cit.) further stated that he lacked adequate data to determine the subspecific status of the New Britain population.

Key to subspecies of *Platymantis papuensis*

1. Finger tips dilated into disks broader than subtending phalanx, breadth rarely less than 85 per cent of toe disk breadth, and usually more than 35 per cent of tympanum diameter; first finger length about equal to second, distinctly shorter than fourth, known from New Britain *papuensis schmidtii*
- 1'. Finger tips little dilated, not or slightly broader than subtending phalanx, breadth usually less than 85 per cent of toe disk breadth, usually less than 35 per cent of tympanum diameter; first finger usually longer than 2nd, nearly equal to fourth 2
2. Females immature at less than 50 mm snout-vent length; dorsal folds narrow, numerous, elongate; known from Solomon Islands *papuensis weberi*
- 2'. Females mature between 40 and 50 mm snout-vent length; dorsal folds not extremely narrow, scattered, mostly short; known from New Guinea *papuensis papuensis*

Platymantis p. papuensis Meyer

Platymantis corrugatus papuensis Meyer, 1874, Monatsber. Akad. Wiss. Berlin, p. 139: Biak Id., Netherlands New Guinea.

Diagnosis: A moderately large *Platymantis*, 19 mature females measuring from about 43 to 58 mm snout-vent length (a 39.3 mm specimen is judged immature based on the undilated and relatively straight oviduct); relatively short dorsal folds, most numerous anteriorly, solar tubercles scattered, relatively inconspicuous, breadth of third finger tip about 70 to 90 (usually more than 80) per cent of breadth of third toe disk, less than 20 per cent of 3rd finger length and about 30 per cent of tympanum diameter (Table 2); known from New Guinea. Our sample is largely from southeast New Guinea.)

Platymantis papuensis weberi Schmidt

Platymantis weberi Schmidt, 1932, Field Mus. Nat. Hist. Zool. Series, 18, p. 178: Tulagi Id., Solomon Ids.

Diagnosis: A large *Platymantis*, 16 mature females measuring from 54 to 64 mm snout-vent length (a 48.8 mm specimen is judged immature, based on the undilated and relatively straight oviducts); moderately short dorsal folds over entire dorsum; solar tubercles numerous and prominent; breadth of third finger tip 55 to 85 (usually less than 70) per cent of breadth of third toe disk, less than 20 per cent of 3rd finger

length and less than 30 per cent of tympanum diameter (Table 2); known from the Solomon Islands.

***Platymantis papuensis schmidti* new subspecies**

Holotype: South Australian Museum no. 7618, a gravid female, collected at Talasea, Willaumez Peninsula on the north coast of New Britain Island, by M. J. Tyler, January 1966. This locality is near sea level.

Paratypes: South Australian Museum nos. 6762-68, 6772-93, 6795, 6801, 6803-07, 6809-13, 6815-16, 6858-60, 6862, 6869, 6912-13, 6915, 6922-28, 7061, 7070, 7080, 7085, 7088-89, 7093, 7095, 7097, 7101-04, 7106, 7109, 7115 from the Willaumez Peninsula; 7615-23, 7625-74, 7677-78 from the Baining Ranges, north coast of New Britain Island; nos. 7043, 7045, 7099, 7132, 7134-37, 7139, 7147-48, 7151 from the Keravat area, Gazelle Peninsula, 20 miles west of Rabaul; American Museum of Natural History nos. 64258-59, 64261 and 64264, Whiteman Mountains, New Britain Islands; Stanford University nos. 22879, Willaumez Peninsula and 22880-82, Baining Ranges, New Britain Island.

Diagnosis: A moderately large *Platymantis*, mature females measuring from about 40 to 60 mm snout-vent length; males somewhat smaller; tips of fingers dilated into moderate, depressed disks, much broader than subtending phalanx; 3rd finger disk diameter 80 to 100 per cent of 3rd toe disk, usually more than 20 per cent of third finger length, and 33 to 50 per cent of tympanum diameter; 1st finger length about 70 per cent of 3rd finger length (Table 2); dorsal folds moderate to short, usually scattered over entire dorsum; solar tubercles scattered, relatively inconspicuous, known from New Britain Island.

Measurements (in mm) of holotype: Snout-vent length 56.9; head length measured to posterior edge of tympanum 21.2; head breadth 21.8; eye diameter 7.7; tympanum diameter 3.9; snout length 8.8; third finger length 8.7; diameter of third finger disk 1.8; diameter of third toe disk 1.5; tibia length 32.7; length of hind limb 102.5.

Etymology: Named for Dr. Karl Schmidt who first recognized the validity of this population as a distinct taxonomic entity.

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